What is claimed is:

1. A memory access control device comprising:

a memory master to make a request for access to memory;

a memory control unit to produce control signals of memories based on access information to be output from said memory master; and

a hit predicting unit to predict whether or not next access to each bank in memory becomes access to a same page;

wherein said memory control unit, when a hit predicting unit predicts that "a page hit is found" which means that "next access to said bank becomes access to a same page", terminates its routine without closing a bank being presently accessed at time of completion of present access operations and, when said hit predicting unit predicts that "a miss hit is found" which means that "next access to said bank becomes access to a different page", closes said bank being presently accessed at time of completion of present access operations and terminates its routine.

2. The memory access control device according to Claim 1, wherein said hit predicting unit stores results from last "n" (n is a natural number) times accesses to each bank in memory as to whether a page hit has been found or a miss hit has been found and predicts, if a number of times of accesses by which a page hit is found out of last "n" times accesses is "m" or more ($m \leqq n$: "m" and "n" are natural numbers), that a page hit is found in next access to said bank, and on the other hand predicts, if said number of times of accesses is not "m" or more, that a miss hit is found in next access to said bank.

3. The memory access control device according to Claim 1, wherein said hit predicting unit stores results from last "j" ("j" is a natural number) times accesses to each bank in memory as to whether a page hit has been found or a miss hit has been found and predicts, when a page hit has been found in all last "j" times accesses, that a page hit is found in next access to said bank, and on the other hand predicts, if no page hit has been found at least one time in all last "j" times accesses, that a miss hit is found in next access to said bank.

4. The memory access control device according to Claim 1, wherein said hit predicting unit stores results from last "k" ("k" is a natural number) times accesses to each bank in memory as to whether a page hit has been found or a miss hit has been found and predicts, if a miss hit has been found in all last "k" times accesses, that a miss hit is found in next access to said bank, and on the other hand predicts, if no miss hit has been found at least one time in all last "k" times accesses, that a miss hit is found in next access to said bank.

5. The memory access control device according to Claim 1, wherein said hit predicting unit stores results from last "n" ("n" is a natural number) times accesses to each bank in memory as to whether a page hit has been found or a miss hit has been found and predicts, when a miss hit has been always found in all last "k" times accesses ($k \leqq n$: "k" and "n" each are a natural number) out of last "n" times accesses, that a miss hit is found in next access to said bank and predicts, when no miss hit has been found at least one time in all last "k" times accesses out of last "n"

times accesses, if a page hit has been always found in all last "j" times accesses ($j \leqq n$: "j" and "n" each are a natural number) out of last "n" times accesses, that a page hit is found in next access to said bank and predicts, when a miss hit has been found at least one time in all last "j" times accesses out of last "n" times accesses, if a number of times of accesses by which a page hit has been found out of last "n" times accesses is "m" times or more ($m \leqq n$: "m" and "n" each are a natural number), that a page hit is found in next access to said bank and predicts, when a number of times of accesses by which a page hit has been found out of last "n" times accesses is not "m" times or more, that a miss hit is found in next access to said bank.

6. The memory access control device according to Claim 1, wherein said memory master informs, when a bank and a page to be accessed next have been determined, said memory control unit of information about said bank and said page to be accessed and wherein said memory control unit, if said bank to be accessed next by said memory master is same as that being presently accessed and said page to be accessed by said memory master is same as that being presently accessed, terminates its routine, regardless of a prediction result from said hit predicting unit, without closing said bank being presently accessed at time of completion of present access operations and, if said bank to be accessed next by said memory master is same as that being presently accessed and said page to be accessed by said memory master is different from that being presently accessed, closes said bank being presently accessed at time of completion of present access operations, regardless of a prediction result from said hit

predicting unit, and terminates its routine.

7. The memory access control device according to Claim 2, wherein said memory master informs, when a bank and a page to be accessed next have been determined, said memory control unit of information about said bank and said page to be accessed and wherein said memory control unit, if said bank to be accessed next by said memory master is same as that being presently accessed and said page to be accessed by said memory master is same as that being presently accessed, terminates its routine, regardless of a prediction result from said hit predicting unit, without closing said bank being presently accessed at time of completion of present access operations and, if said bank to be accessed next by said memory master is same as that being presently accessed and said page to be accessed by said memory master is different from that being presently accessed, closes said bank being presently accessed at time of completion of present access operations, regardless of a prediction result from said hit predicting unit, and terminates its routine.

8. The memory access control device according to Claim 3, wherein said memory master informs, when a bank and a page to be accessed next have been determined, said memory control unit of information about said bank and said page to be accessed and wherein said memory control unit, if said bank to be accessed next by said memory master is same as that being presently accessed and said page to be accessed by said memory master is same as that being presently accessed, terminates its routine, regardless of a prediction result from said hit predicting unit, without closing

said bank being presently accessed at time of completion of present access operations and, if said bank to be accessed next by said memory master is same as that being presently accessed and said page to be accessed by said memory master is different from that being presently accessed, closes said bank being presently accessed at time of completion of present access operations, regardless of a prediction result from said hit predicting unit, and terminates its routine.

9. The memory access control device according to Claim 4, wherein said memory master informs, when a bank and a page to be accessed next have been determined, said memory control unit of information about said bank and said page to be accessed and wherein said memory control unit, if said bank to be accessed next by said memory master is same as that being presently accessed and said page to be accessed by said memory master is same as that being presently accessed, terminates its routine, regardless of a prediction result from said hit predicting unit, without closing said bank being presently accessed at time of completion of present access operations and, if said bank to be accessed next by said memory master is same as that being presently accessed and said page to be accessed by said memory master is different from that being presently accessed, closes said bank being presently accessed at time of completion of present access operations, regardless of a prediction result from said hit predicting unit, and terminates its routine.

10. The memory access control device according to Claim 5, wherein said memory master informs, when a bank and a page to be

accessed next have been determined, said memory control unit of information about said bank and said page to be accessed and wherein said memory control unit, if said bank to be accessed next by said memory master is same as that being presently accessed and said page to be accessed by said memory master is same as that being presently accessed, terminates its routine, regardless of a prediction result from said hit predicting unit, without closing said bank being presently accessed at time of completion of present access operations and, if said bank to be accessed next by said memory master is same as that being presently accessed and said page to be accessed by said memory master is different from that being presently accessed, closes said bank being presently accessed at time of completion of present access operations, regardless of a prediction result from said hit predicting unit, and terminates its routine.

11. A memory access control device comprising:

two or more memory masters to make a request for access to memory;

an arbiter unit to arbitrate memory access requests fed from said memory masters and to select access information fed from any one of said memory masters;

a memory control unit to produce a control signal of memory based on access information output from said arbiter unit; and

a hit predicting unit to predict whether or not next access to each bank in memory becomes access to a same page;

wherein said memory control unit, when said hit predicting unit predicts that "a page hit is found" which means that "next access to said bank is access to a same page", terminates its

routine without closing said bank being presently accessed at time of completion of present access operations and when said hit predicting unit predicts that "a miss hit is found" which means that "next access to said bank is access to a different page", closes said bank being presently accessed at time of present access operations and terminates its routine.

12. The memory access control unit according to Claim 11, wherein said hit predicting unit stores results from last "n" ("n" is a natural number) times accesses to each bank in memory as to whether a page hit has been found or a miss hit has been found and predicts, if a number of times of accesses by which a page hit is found out of last "n" times accesses is "m" or more ($m \leq n$: "m" and "n" each are a natural number), that a page hit is found in next access to said bank and predicts, if said number of times of accesses is not "m" or more, that a miss hit is found in next access to said bank.

13. The memory access control device according to Claim 11, wherein said hit predicting unit stores results from last "j" ("j" is a natural number) times accesses to each bank in memory as to whether a page hit has been found or a miss hit has been found and predicts, when a page hit has been found in all last "j" times accesses, that a page hit is found in next access to said bank and predicts, if no page hit has been found in all last "j" times accesses, that a miss hit is found in next access to said bank.

14. The memory access control device according to Claim 11, wherein said hit predicting unit stores results from last "k" ("k"

is a natural number) times accesses to each bank in memory as to whether a page hit has been found or a miss hit has been found and predicts, if a miss hit has been found in all last "k" times accesses, that a miss hit is found in next access to said bank and predicts, if no miss hit has been found in all last "k" times accesses, that a page hit is found in next access to said bank.

15. The memory access control device according to Claim 11, wherein said hit predicting unit stores results from last "n" ("n" is a natural number) times accesses to each bank in memory as to whether a page hit has been found or a miss hit has been found and predicts, when a miss hit has been found in all last "k" (k $\leqq$n: "k" and "n" each are a natural number) times accesses out of last "n" times accesses, that a miss hit is found in next access to said bank and predicts, when no miss hit has been found at least one time in all last "k" times accesses out of last "n" times accesses, if a page hit is found in all last "j" times accesses (j$\leqq$n: "j" and "n" each are a natural number) out of last "n" times accesses, that a page hit is found in next access to said bank and predicts, when a miss hit has been found at least one time in all last "j" times accesses out of last "n" times accesses, if a number of times of accesses by which a page hit has been found out of last "n" times accesses is "m" times or more (m$\leqq$n: "m" and "n" each are a natural number), that a page hit is found in next access to said bank and predicts, when a number of times of accesses by which a page hit has been found out of last "n" times accesses is not "m" times or more, that a miss hit is found in next access to said bank.

16. The memory access control device according to Claim 11, wherein each memory master informs, when a bank and a page to be accessed next have been determined, said arbiter unit and said memory control unit of information about said bank and said page to be accessed and wherein said memory control unit, if there exists said memory master which gets next access to a same bank as that being presently accessed and to a same page as that being presently accessed, terminates its routine without closing said bank being presently accessed at time of completion of present access operations, regardless of a prediction result fed from said hit predicting unit, and terminates its routine and, if there exists said memory master which gets next access to a same bank as that being presently accessed and to a page being different from that being presently accessed, closes said bank being presently accessed at time of completion of present access operations, regardless of a prediction result fed from a hit predicting unit, and terminates its routine and said arbiter unit, if there exists said memory master which gets next access to a same bank and a same page as those being presently accessed, selects said memory master with priority.

17. The memory access control device according to Claim 12, wherein each memory master informs, when a bank and a page to be accessed next have been determined, said arbiter unit and said memory control unit of information about said bank and said page to be accessed and wherein said memory control unit, if there exists said memory master which gets next access to a same bank as that being presently accessed and to a same page as that being presently accessed, terminates its routine without closing said

bank being presently accessed at time of completion of present access operations, regardless of a prediction result fed from said hit predicting unit, and terminates its routine and, if there exists said memory master which gets next access to a same bank as that being presently accessed and to a page being different from that being presently accessed, closes said bank being presently accessed at time of completion of present access operations, regardless of a prediction result fed from a hit predicting unit, and terminates its routine and said arbiter unit, if there exists said memory master which gets next access to a same bank and a same page as those being presently accessed, selects said memory master with priority.

18. The memory access control device according to Claim 13, wherein each memory master informs, when a bank and a page to be accessed next have been determined, said arbiter unit and said memory control unit of information about said bank and said page to be accessed and wherein said memory control unit, if there exists said memory master which gets next access to a same bank as that being presently accessed and to a same page as that being presently accessed, terminates its routine without closing said bank being presently accessed at time of completion of present access operations, regardless of a prediction result fed from said hit predicting unit, and terminates its routine and, if there exists said memory master which gets next access to a same bank as that being presently accessed and to a page being different from that being presently accessed, closes said bank being presently accessed at time of completion of present access operations, regardless of a prediction result fed from a hit

predicting unit, and terminates its routine and said arbiter unit, if there exists said memory master which gets next access to a same bank and a same page as those being presently accessed, selects said memory master with priority.

19. The memory access control device according to Claim 14, wherein each memory master informs, when a bank and a page to be accessed next have been determined, said arbiter unit and said memory control unit of information about said bank and said page to be accessed and wherein said memory control unit, if there exists said memory master which gets next access to a same bank as that being presently accessed and to a same page as that being presently accessed, terminates its routine without closing said bank being presently accessed at time of completion of present access operations, regardless of a prediction result fed from said hit predicting unit, and terminates its routine and, if there exists said memory master which gets next access to a same bank as that being presently accessed and to a page being different from that being presently accessed, closes said bank being presently accessed at time of completion of present access operations, regardless of a prediction result fed from a hit predicting unit, and terminates its routine and said arbiter unit, if there exists said memory master which gets next access to a same bank and a same page as those being presently accessed, selects said memory master with priority.

20. The memory access control device according to Claim 15, wherein each memory master informs, when a bank and a page to be accessed next have been determined, said arbiter unit and said

memory control unit of information about said bank and said page to be accessed and wherein said memory control unit, if there exists said memory master which gets next access to a same bank as that being presently accessed and to a same page as that being presently accessed, terminates its routine without closing said bank being presently accessed at time of completion of present access operations, regardless of a prediction result fed from said hit predicting unit, and terminates its routine and, if there exists said memory master which gets next access to a same bank as that being presently accessed and to a page being different from that being presently accessed, closes said bank being presently accessed at time of completion of present access operations, regardless of a prediction result fed from a hit predicting unit, and terminates its routine and said arbiter unit, if there exists said memory master which gets next access to a same bank and a same page as those being presently accessed, selects said memory master with priority.